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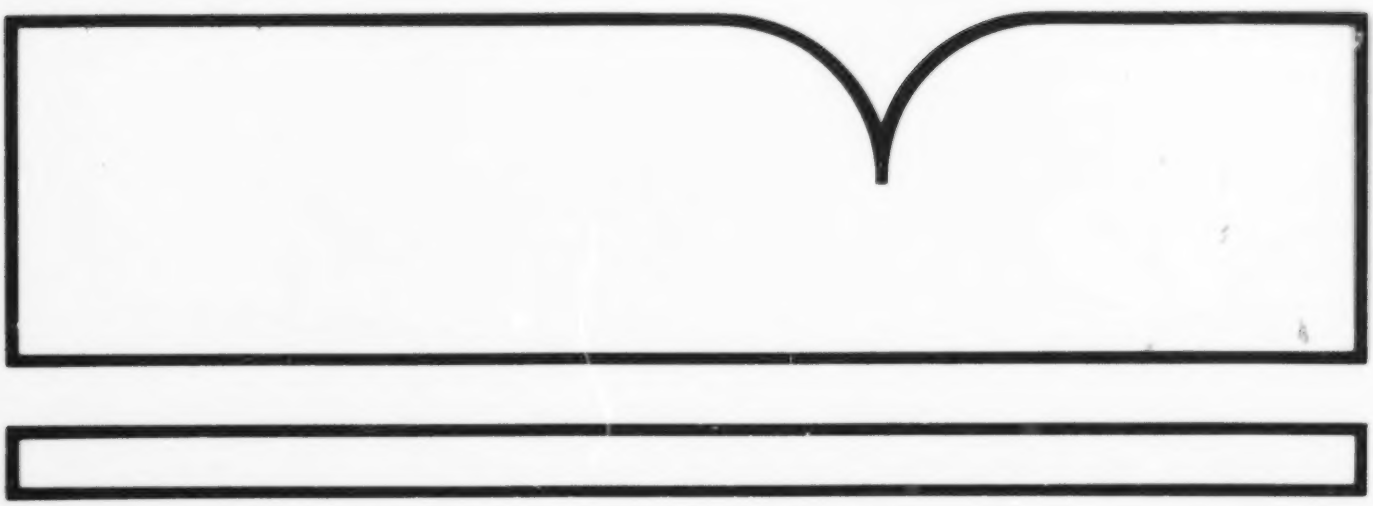
AEROS (Aerometric and Emissions Reporting System) Information

(U.S.) Environmental Protection Agency
Research Triangle Park, NC

1974



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16. ABSTRACT

The Aerometric and Emissions Reporting System (AEROS) is a comprehensive computer-based system established by the National Air Data Branch to collect, store and analyze air pollution data. The data are collected by the various state and local agencies and reported to EPA. These data are then stored and analyzed in AEROS. The most noteable feature of AEROS is that it is a reporting system. The primary function of AEROS is to provide concise and standardized reports on various aspects of air pollution.

AEROS is composed of several subsystems, some of which are capable of functioning as independent data systems. The intent of this pamphlet is to show the relationships between the various AEROS subsystems and the information available from each.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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PB82-240797

AEROS

AEROMETRIC AND EMISSIONS REPORTING SYSTEM

INFORMATION

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U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR AND WASTE MANAGEMENT
OFFICE OF AIR QUALITY PLANNING AND STANDARDS
RESEARCH TRIANGLE, NORTH CAROLINA

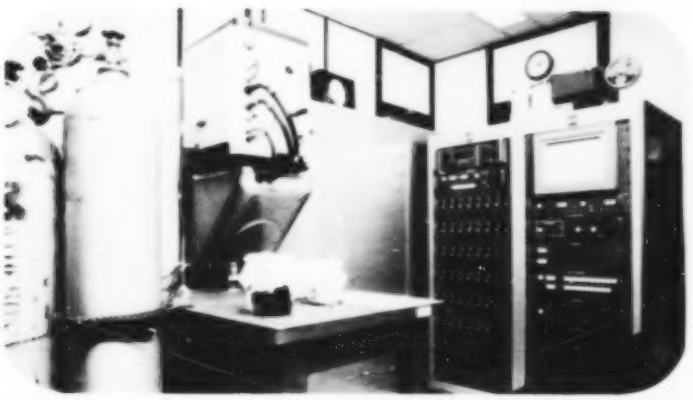
FOREWORD

On the eve of the Clean Air Act's deadline for attainment of primary ambient air quality standards, Russell Train remarked: "The nation has made significant progress on cleaning up the air, but there is still a long way to go." Twenty years of federal participation in the solution to the air pollution problem have been productive in many ways. The magnitude of the problem continues to be assessed and further defined. The major key to this assessment, and thus further progress, lies in the information available to make reasonable and intelligent decisions.

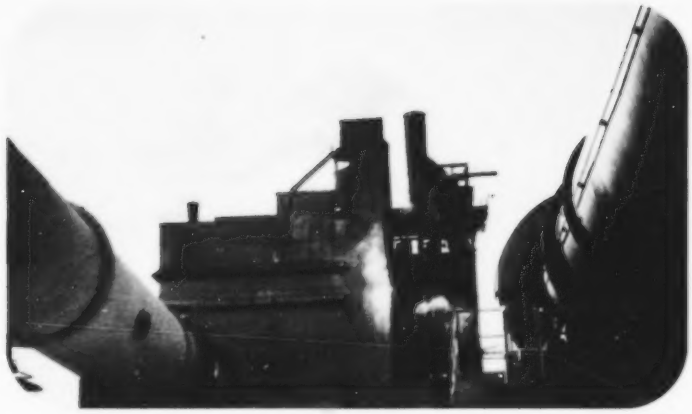
AIR POLLUTION

DEFINING THE PROBLEM

In the United States today, air pollution is an extremely important problem; but before realistic solutions can be attained, the precise causes and extent of the problem must be found. To achieve the goal of clean air, the Congress passed the Clean Air Act of 1970, which contains a mandate that requires the collection of significant quantities of air pollution data. To facilitate collection and efficient utilization of these data, the Office of Air and Waste Management formed the National Air Data Branch (NADB) in 1972. NADB was given the responsibility to amass source, emission, air quality and related data from the 55 states and territories and to organize these data into one centralized data bank.



COLLECTION OF DATA



In order to gather and store the legally required data, NADB originally established two basic computerized data storage systems known as National Emissions Data System (NEDS) and Storage and Retrieval of Aerometric Data (SAROAD). In 1973 and 1974, however, it became apparent that these systems would have to be expanded. A decision was therefore made to merge the two systems into a larger unified system having analysis capabilities, uniform procedures and expanded storage capability. Thus, the Aerometric and Emissions Reporting System (AEROS) was born. AEROS includes both NEDS and SAROAD and numerous other subsystems, as well as the routine data management procedures required. Some of these systems are in final development and will provide information to users in the immediate future.

AEROS

FUNCTION

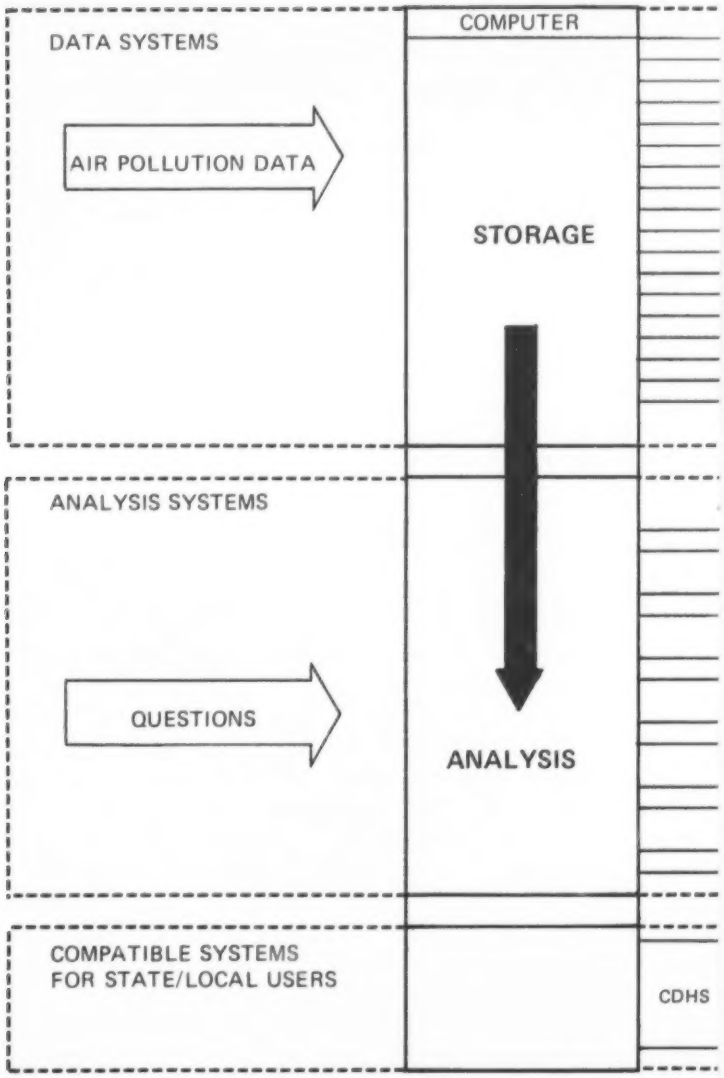
The Aerometric and Emissions Reporting System (AEROS) is a comprehensive computer-based system established by the National Air Data Branch to collect, store and analyze air pollution data. The data are collected by the various state and local agencies and reported to EPA. These data are then stored and analyzed in AEROS. The most noteable feature of AEROS is that it is a *reporting system.* The primary function of AEROS is to provide concise and standardized reports on various aspects of air pollution.

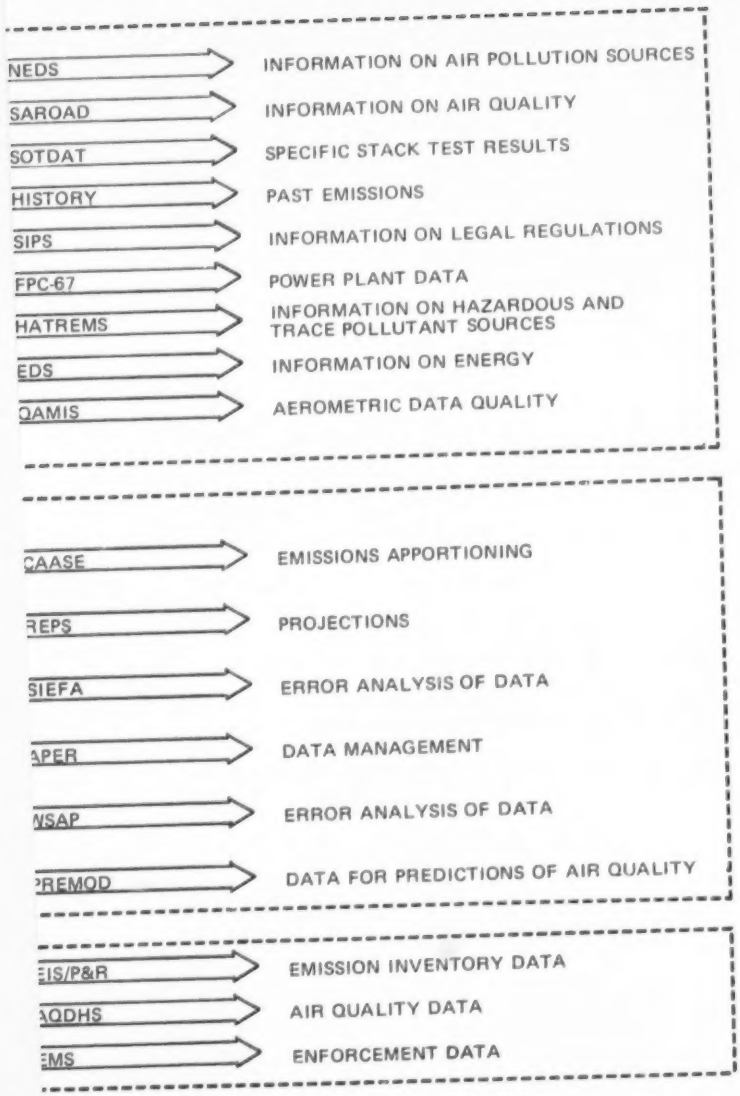
AEROS is composed of several subsystems, some of which are capable of functioning as independent data systems. The intent of this pamphlet is to show the relationships between the various AEROS subsystems and the information available from each.

ORGANIZATION

The complete AEROS complex can best be understood by considering its two basic segments: (1) the *AEROS Data System* collects, stores and reports air pollution data to be put into the system; (2) the *AEROS Analysis System* draws data from the Data System and uses them to answer questions regarding the nature and causes of air pollution, predictions of future problems, legal action which should be taken and related problems. By coordinating these two systems, the Environmental Protection Agency is able to obtain answers to many questions regarding air pollution problems and needs from one comprehensive system. The make-up and coordination of these two portions of AEROS as well as the interaction between the various agencies and their respective responsibilities in maintaining AEROS are described by the chart on the following pages.

THE AEROS SYSTEM




NEDS
INFORMATION ON AIR POLLUTION SOURCES
SAROAD
INFORMATION ON AIR QUALITY
SOTDAT
SPECIFIC STACK TEST RESULTS
HISTORY
PAST EMISSIONS
SIPS
INFORMATION ON LEGAL REGULATIONS
FPC-67
POWER PLANT DATA
HATREMS
INFORMATION ON HAZARDOUS AND TRACE POLLUTANT SOURCES
EDS
INFORMATION ON ENERGY
QAMIS
AEROMETRIC DATA QUALITY
CAASE
EMISSIONS APPORTIONING
REPS
PROJECTIONS
SIEFA
ERROR ANALYSIS OF DATA
APER
DATA MANAGEMENT
NSAP
ERROR ANALYSIS OF DATA
PREMOD
DATA FOR PREDICTIONS OF AIR QUALITY
EIS/P&R
EMISSION INVENTORY DATA
AQDHS
AIR QUALITY DATA
EMS
ENFORCEMENT DATA

COMPUTER PROGRAMS

AEROS DATA SYSTEMS

NEDS (National Emissions Data System)
Stores and reports source and emissions related data for: particulates, SO_x, NO_x, CO, and hydrocarbons

Describes 78,000 point sources

Reports data for 3,200 area sources

Reports information to AEROS via emission inventory questionnaires, State Implementation Plan background data and Semi Annual Reports

SAROAD (Storage and Retrieval of Aerometric Data)
Stores and reports information gathered by ambient air monitoring networks across the country

Provides information on pollutant levels, weather information and sites

Collects information for AEROS from over 4,000 active air monitoring sites across the nation

SOTDAT (Source Test Data System)
Stores data collected from extensive tests conducted at pollution sources

Provides retention of data too specific to be stored in NEDS data base

Provides source test data for development of emission estimation factors

EHIS (Emission History Information System)
Determines and reports pollution emission estimates for the U.S. for previous years

Provides data for development or evaluation of national air pollution control strategies

Provides basic prediction data for detecting future problems

SIPS (State Implementation Plan System)
Stores text of state regulations which pertain to limitation of air pollutant emissions

Stores federally promulgated regulations when implemented

FPC-67 (Federal Power Commission Form No. 67)
Stores and selectively outputs descriptive and operation data from power plants over 25 megawatt capacity as reported yearly to the Federal Power Commission

Facilitates complete and comprehensive overview of power generating facilities and associated air pollution problems

HATREMS (Hazardous and Trace Emissions System)
Stores data collected regarding emissions of air pollutants that are not included in NEDS: emissions other than particulates, sulfur oxides, nitrogen oxides, carbon monoxide, or hydrocarbons

EDS (Energy Data System)
Gathers and reports energy related data, such as fuel usage, from the other data bases in the AEROS system

QAMIS (Quality Assurance Monitoring Information System)
Stores data on the procedures, equipment, personnel, and other related information about data acquiring agencies

Provides mechanism for monitoring and analysis of data gathering techniques

AEROS ANALYSIS SYSTEMS

CAASE (Computer Assisted Area Source Emissions)
Proportions county, area-source data into smaller areas based on population and similar factors to show pollution levels within grids

Provides mechanism for usage of NEDS area source data in mathematical air quality models

REPS (Regional Emissions Projection System)
Predicts emissions from geographical area or source to the year 2000

Identifies probable future problems

Provides mechanism for manipulation to allow prediction of the effect of changing conditions (e.g., less strict regulations)

SIEFA (Source Inventory and Emission Factor Analysis)
Computes estimated errors in emissions data due to inaccuracies in data collection and estimation procedures

Provides mechanism for determination of areas where data improvement is required

APER (Air Pollutant Emissions Report)
Provides mechanism to organize and track communications with air pollution sources and thereby better coordinate the data handling and acquisition

Serves as a data management tool

WSAP (Weighted Sensitivity Analysis Program)
Computes the tolerable error in emissions data

PREMOD (Pre-Modeling Data Output)
Makes air pollution data compatible with mathematical modeling computer programs

Provides mechanism for data output for determination and prediction of ambient air quality for a specific area from source data

AEROS COMPATIBLE SYSTEMS

CDHS (Comprehensive Data Handling System)

Provides software systems for state/local control agencies to use on their computers in performing their daily operations and to ease their job in meeting EPA reporting requirements; updates and enhancements are provided by NADB

Allows state and local agencies to better monitor and manage their air pollution data management problems

The CDHS System consist of the following

AQDHS (Air Quality Data Handling Subsystem)

Creates and maintains an air quality data base

Extracts, retrieves, and prints data from the user data base

Prepares a data set for submission to EPA to automatically satisfy agency quarterly reporting requirements

EIS/P&R (Emission Inventory Subsystem/Permit and Registration)

Creates and maintains a data base describing sources of pollution, levels of pollution, and descriptive data related to permits or registrations

Supports the agency functions of inspections, complaints, legal compliance, and source surveillance

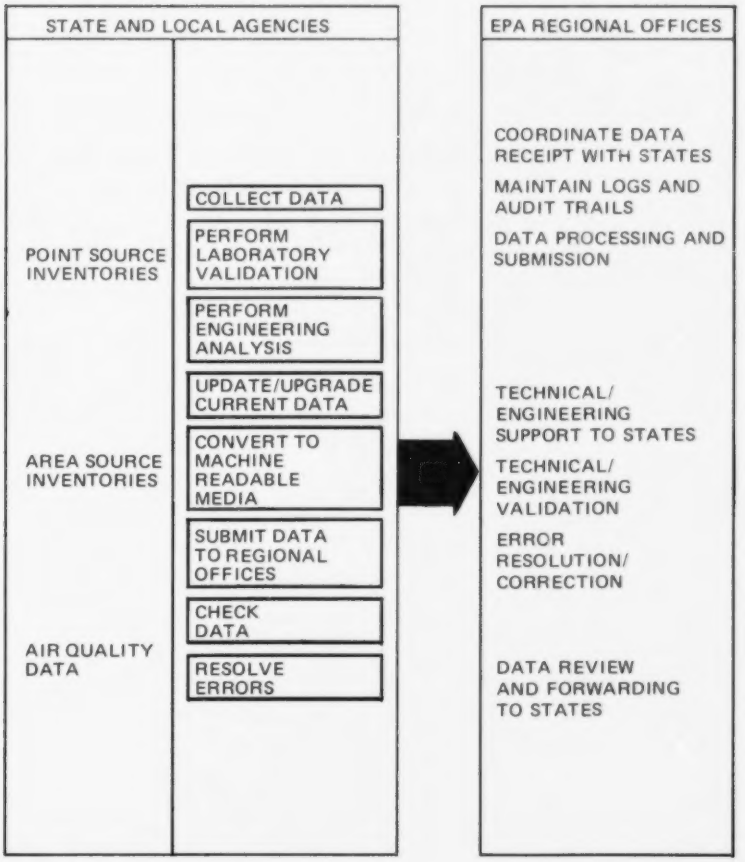
Prepares a data set for submission to EPA to automatically satisfy agency semiannual reporting requirements

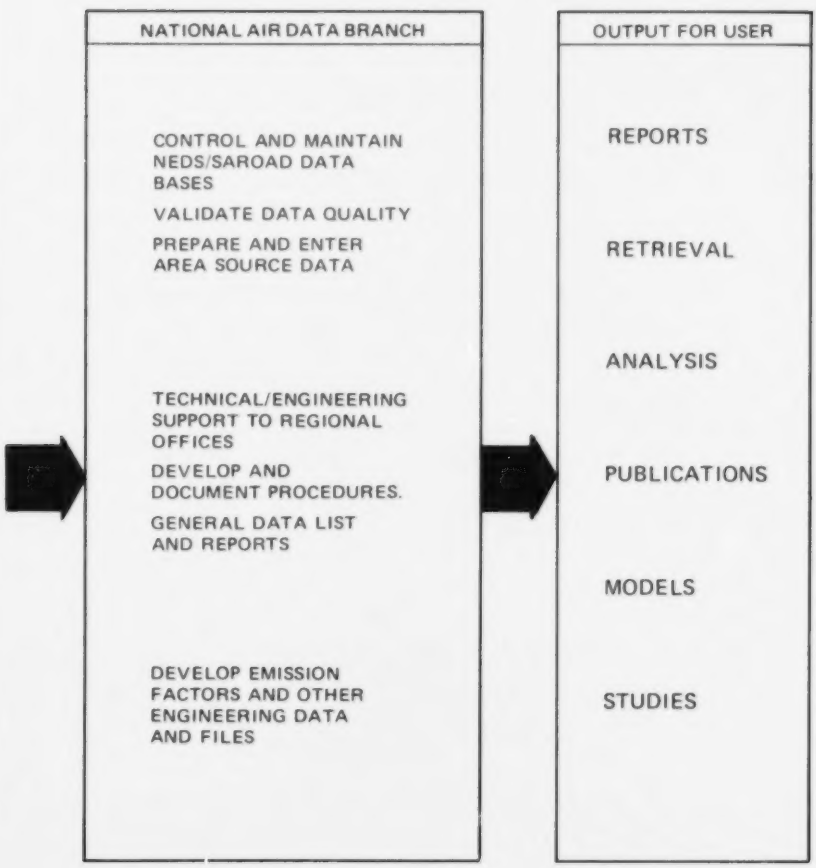
EMS (Enforcement Management Subsystem)

Provides a data base for use by state and local agencies to control enforcement activities

Prepares reports, including standardized letters which can be mailed directly to sources

INTERAGENCY RESPONSIBILITIES AND COOPERATION




NATIONAL AIR DATA BRANCH
CONTROL AND MAINTAIN NEDS/SAROAD DATA BASES
VALIDATE DATA QUALITY
PREPARE AND ENTER AREA SOURCE DATA
TECHNICAL/ENGINEERING SUPPORT TO REGIONAL OFFICES
DEVELOP AND DOCUMENT PROCEDURES.
GENERAL DATA LIST AND REPORTS
DEVELOP EMISSION FACTORS AND OTHER ENGINEERING DATA AND FILES
OUTPUT FOR USER
REPORTS
RETRIEVAL
ANALYSIS
PUBLICATIONS
MODELS
STUDIES

USER SERVICES

The EPA air data systems are primarily used by governmental agencies although the private sector is becoming more aware of the advantages in utilizing a common data base. It is expected that the EPA air data systems will be used more by private groups in the future.

Information from these systems can be accessed through standardized publications or by custom data retrieval requests.

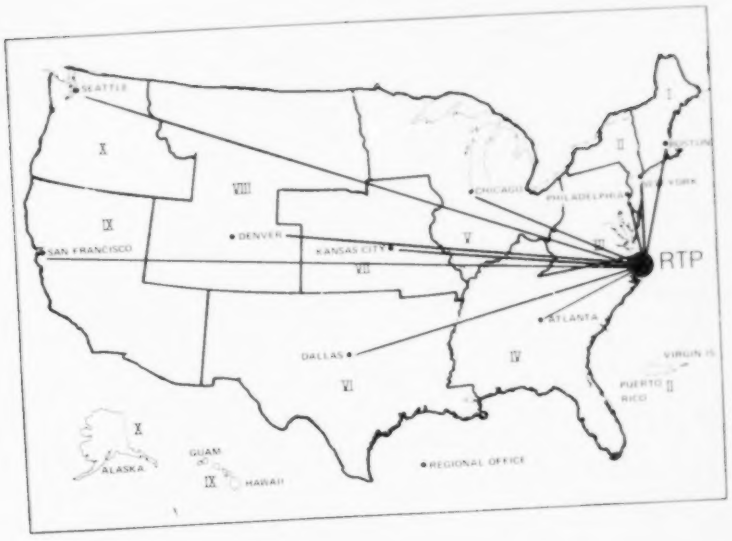
PUBLICATIONS AVAILABLE

Air Quality Data Statistics — Annual/Quarterly
Compilation of Air Pollutant Emission Factors
Directory of Active Air Quality Monitoring Sites — Annual
Emission Factors for Trace Substances
National Emissions Report — Annual
NEDS Fuel Use Report — Annual
OAQPS Guideline AEROS Manual Series

AEROS Overview, Vol. I	OAQPS No. 1.2-038
AEROS User's Manual, Vol. II	OAQPS No. 1.2-039
AEROS Summary & Retrieval Manual, Vol III	OAQPS No. 1.2-040
NADB Internal Operations Manual, Vol. IV	OAQPS No. 1.2-041
AEROS Manual of Codes, Vol. V	OAQPS No. 1.2-042

Copies of these publications are available from the Air Pollution Technical Information Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711, or from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151.

FOR ALL OTHER INFORMATION PLEASE CONTACT
THE AEROS REPRESENTATIVE AT YOUR
REGIONAL EPA OFFICE



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